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EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 03/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/030,173	Applicant(s) PUTTER ET AL.	
	Examiner Edna Wong	Art Unit 1753	

-- Th MAILING DATE of this communication appears on th cover sh t with th corr spondenc address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Specification

The disclosure is objected to because of the following informalities:

page 2, line 12, "formula II" should be amended to -- formula III --.

page 7, line 17, "RuO_x" should be amended to -- RuO_x --.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims **1-2 and 11** are objected to because of the following informalities:

Claim 1

line 4, it is suggested that the word -- each -- be inserted after the word "are".

line 40, it is suggested that the word -- starting -- be inserted after the word "a".

See claim 2, line 17 and claim 5, line 2.

Claim 2

line 17, it is suggested that the word -- the -- be inserted after the word "as".

Claim 11

line 2, the words "essentially consists" should be amended to the words -- consists essentially --.

line 10, it is suggested that the word "conventional" be deleted from the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

I. Claims **2 and 3** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The compound prepared corresponds to the general formula I (from claim 1). General formula I has a permanent hydroxyl group on the alpha carbon, i.e., -C-OH. The general formulas IIIa and IVa (from claim 2) do not have a permanent hydroxyl group on their alpha carbon. Therefore, they are not the compounds prepared by the process as described in claim 1, and the process of claim 1 would not be enabling to

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prepare these compounds.

II. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 15, it is unclear how "R³ is additionally an acetylated carbonyl group in which the alkoxy groups are derived from an alcohol of the general formula II" when R³ is a "hydrogen, C₁- to C₂₀-alkenyl, C₂- to C₂₀-alkenyl, C₂- to C₂₀-alkynyl, ... a (CH=CH) unit" (from claim 1, lines 4-14).

lines 15-16, "the alkoxy groups" lack antecedent basis.

line 20, "the alkoxy groups" lack antecedent basis.

lines 29-30, "V is a carbonyl group or is as defined for U under the formula I". U under the formula I is defined as an acetylated carbonyl group or is a compound of the general formula III. If V was defined as a compound of the general formula III, then formula III would look like:



However, it is unclear if this is intended (see also claim 2, lines 12 and 16).

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line 32, the alternative expression of the Markush group is improper. MPEP 2173.05(h). The word "and" (first occurrence) should be amended to the word -- or --.

lines 31-33, "W is as defined for V", with the proviso that one of the groups V and W is a carbonyl group and the other is an acetylated carbonyl group. V is a carbonyl group or is as defined for U under the formula I. U under the formula I is defined as an acetylated carbonyl group or is a compound of the general formula III.

If one of the groups V and W is a carbonyl group and the other is an acetylated carbonyl group, then when can W be a compound of the formula III? It appears that W cannot be defined as V which is defined as U with the proviso.

lines 37-38, it is unclear how "V and W are as defined under the formula II". Formula II does not contain V and W.

line 44, it appears that "a compound" is the same as that recited in claim 1, lines 21-24. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

line 52, it appears that "a compound" is the same as that recited in claim 1, lines 35-37. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

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line 60, it appears that "an alcohol" is the same as that recited in claim 1, lines 16-19. However, it is unclear if it is. If it is, then it is suggested that the word "an" be amended to the word -- the --.

line 63, "the 1st, 2nd, 6th or 8th sub-group" lacks antecedent basis. Also, are these Groups from the Periodic Table of Elements?

Claim 2

line 16, it is unclear how "R⁴" is as defined under the formula Ia or IIIa". Formulas Ia and IIIa do not contain a R⁴.

Claim 4

line 3, the carbon in "-CH₂(OR⁴)₂" of formula Ib has 5 bonds. Carbon cannot have 5 bonds.

line 7, "m" has not been defined in the claim for formula Vb.

Claim 6

line 1, it is unclear how there can be anions (plural) in the metal salt. A metal salt would have contained one anion and one cation, like CuSO₄.

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Claim 7

line 1, it is unclear how there can be anions (plural) in the metal salt. A metal salt (singular) would have contained one anion and one cation, for example, CuSO_4 .

Claim 8

line 1, it is unclear how there can be cations (plural) in the metal salt. A metal salt (singular) would have contained one anion and one cation, for example, CuSO_4 .

Claim 9

line 1, "the electrolysis liquid" lacks antecedent basis. See also claim 9, line 3.

line 2, it is unclear how there can be metal ions (plural) in the metal salt. A metal salt (singular) would have contained one anion and one cation, for example, CuSO_4 .

Claim 10

line 1, "the electrolysis liquid" lacks antecedent basis.

line 2, it appears that "a halogen-containing auxiliary electrolyte" is further limiting the auxiliary electrolyte recited in claim 1, line 61. However, it is unclear if it is.

Claim 11

line 1, "the electrolysis liquid" lacks antecedent basis.

line 3, it appears that "a starting compound" is the same as the compound recited in claim 1, lines 40-43. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

line 4, it appears that "an alcohol" is the same as that recited in claim 1, lines 16-19. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

line 5, it appears that "a halogen-containing auxiliary electrolyte" is further limiting the auxiliary electrolyte recited in claim 1, line 61. However, it is unclear if it is.

line 6, it appears that "catalytic amounts" is the same as that recited in claim 1, lines 62. However, it is unclear if it is. If it is, then it is suggested that the word "a" be amended to the word -- the --.

line 7, the word "possibly" is indefinite. It is suggested that the word "possibly" be amended to the word -- optionally --.

line 8, the word "possibly" is indefinite. It is suggested that the word "possibly" be amended to the word -- optionally --.

line 10, it is unclear how there can be "other conventional co-solvents" when there is no solvent positively recited in the process.

Claim 12

line 2, "the starting compounds and products" lack antecedent basis.

line 3, "the other by-products of electrolysis" lacks antecedent basis.

lines 3-4, it is unclear which compounds are "the abovementioned compounds".

line 7, it appears that the "auxiliary electrolyte" is the same as that recited in claim 1, line 61. However, it is unclear if it is.

line 8, it is unclear how there can be "any co-solvents" when there is no solvent positively recited in the process.

line 9, "the electrolysis liquid" lacks antecedent basis.

Claim 13

line 1, it appears that "the electrolysis" is the same as the electrochemical reaction recited in claim 1, line 60. However, it is unclear if it is.

Claim 14

line 1, "the anodes" lack antecedent basis. Furthermore, there is no positive recitation that there is a plurality of anodes present in the electrochemical reaction.

line 2, "the cathodes" lack antecedent basis. Furthermore, there is no positive recitation that there is a plurality of cathodes present in the electrochemical reaction.

Claim Rejections - 35 USC § 103

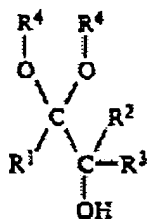
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hermeling** (US Patent No. 5,266,171) in combination with **Shono et al.** ("Electro-organic Chemistry. Part 83. Electro-organic Transformation of Aldehydes and Ketones to α -Hydroxylated Acetals Utilizing Mediators and Some Synthetic Uses of the Products", J. Chem. Soc., Perkin Trans. 1, 1986, pp. 73-77).

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Hermeling teaches a process for the preparation of a compound of the general formula I



(I)

wherein R^1 is at least hydrogen,

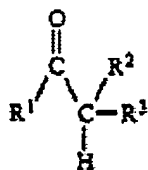
R^2 is at least hydrogen,

R^3 is at least hydrogen, and

R^4 is C_1 - C_8 -alkyl. (see col. 1, line 46 to col. 2, line 3 for a full description of these radicals),

comprising the step of:

(a) subjecting a compound of the general formula V



(V)

wherein R^1 , R^2 , R^3 and R^4 are as defined under the formula I (col. 2, lines 4-15) to an electrochemical reaction with an alcohol of the general formula (II)



(II)

wherein R^4 is C_1 - C_8 -alkyl (col. 2, lines 15-17) in the presence of an auxiliary electrolyte (col. 2, lines 18-19; and col. 8, lines 31-41).

A compound of the general formula Ia wherein U is as defined under the formula 1, n is 0, 1, 2 or 3 and R^5 is C_1 - C_8 -alkyl, C_1 - C_8 -alkoxy, halogen, C_1 - C_4 -haloalkyl, C_1 - C_4 -haloalkoxy, phenyl, phenoxy, halophenoxy, carboxyl, C_2 - C_8 -alkoxycarbonyl or cyano, is prepared by employing, as starting compound of the general formula V, a compound of the general formula Va where n and R^5 are as defined under the formula Ia (col. 1, line 46 to col. 2, line 21).

The compound of the general formula Ia is 2-phenyl-2,2-dimethoxyethanol (col. 1, line 46 to col. 2, line 21).

The compound of the general formula I is a compound of the general formula Ib, $H_{2m}C_m-CHOH-CH_2(OR^4)_2$, where m is a number from 1-10, R^4 is as defined under the formula II, and the compound of the general formula V is a compound of the general formula Vb, $H_{2m}C_m-CH_2-CHO$ (col. 1, line 46 to col. 2, line 21).

The compound of the formula I is 2,2,3,3-tetramethoxypropanol, and the starting compound employed is methylglyoxal dimethyl acetal (col. 1, line 46 to col. 2, line 21).

The electrolysis liquid contains a halogen-containing auxiliary electrolyte (col. 8, lines 31-41).

The electrolysis liquid consist essentially of a starting compound of the general formula V, an alcohol of the general formula II and a halogen-containing auxiliary electrolyte (col. 1, line 46 to col. 2, line 21; and col. 8, lines 31-41).

The electrolysis liquid has the following composition: 1 to 49% by weight of ketone of the formula I; 50 to 98.8% by weight of alkanol R^4-OH ; 0.1 to 5% by weight of auxiliary electrolyte; and 0.1 to 5% by weight co-solvents (= water) [col. 8, lines 42-52].

The electrolysis is carried out in an undivided electrolysis cell (col. 8, lines 53-61).

The anodes employed are made of noble metals, noble metal oxides or graphite (col. 8, lines 62-65) and the cathodes are made of iron, steel, nickel, noble metals or graphite (col. 8, lines 66-68).

Hermeling does not teach adding catalytic amounts of a metal salt (S) derived from a metal of the 1st, 2nd, 6th or 8th sub-group or from lead, tin or rhenium.

However, Shono teaches that iodine ions behave as catalytic mediators in the transformation of carbonyl compounds to α -hydroxylated acetals (page 74, bridging paragraph).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Hermeling by adding catalytic amounts of a metal salt (S) derived from a metal of the 1st, 2nd, 6th or 8th sub-group or from lead, tin or rhenium because salts such as KI behave as catalytic mediators in the

transformation of carbonyl compounds to α -hydroxylated acetals as taught by Shono (page 74, bridging paragraph). Thus, the speed of the electrochemical reaction would have been improved.

Furthermore, it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP § 2144.06 and § 2144.07.

As to wherein the anions of the metal salt (S) is derived from mineral acids; and wherein the anions of the metal salt (S) are phosphate, sulfate, nitrate, perchlorate or halide, the anion of KI is a halide (see Shono, page 74, bridging paragraph).

As to wherein the cations of the metal salt are iron, nickel, platinum, palladium, cobalt, zinc, silver or copper, it is conventional in the art to catalyze an electrochemical reaction with a metal salt. It would have been obvious to the artisan to have substituted the catalyst disclosed by Shono with a metal catalyst because it would have been doing the same endeavor of improving the speed of the electrochemical reaction.

As to wherein the electrolysis liquid contains from 1 to 1000 ppm by weight of metal ions of the metal salt (S), based on the total amount of electrolysis liquid, the concentration of metal ions of the metal salt is a result-effective variable and one skilled in the art has the skill to calculate the concentration that would determine the success of

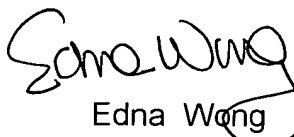
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the desired reaction to occur, i.e., catalyzes the electrochemical reaction, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.


Edna Wong
Primary Examiner
Art Unit 1753

EW
March 21, 2003